FAIRFAX COUNTY PARK AUTHORITY
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ATHLETIC FIELD LIGHTING SYSTEMS

Performance Specifications Outline

(Rev. 2.2)

September 1, 2006

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SPECIFICATIONS

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Athletic Field Lighting Systems
Performance Specifications
Outline

1.0 APPLICABILITY

These Specifications are applicable to and prescribe minimum performance requirements for the following types of athletic fields *(Note: for field layouts see Attachment Figures 1 to 5)*:

1. Small Rectangular Field (Figure 1) ..... 180' x 360'
2. Large Rectangular Field (Figure 2) ..... 210' x 360'
3. Little League - U13 / Fast Pitch Diamond Field (Figure 3) ..... 200' x 200' x 200'
4. Slow Pitch / Softball Diamond Field (Figure 4) ..... 300' x 300' x 300'
5. Babe Ruth / Baseball Diamond Field (Figure 5) ..... 310' x 380' x 310'

2.0 GENERAL DESIGN CRITERIA

2.1 Illuminating Engineering Society of North America ..... (IESNA)

2.2 Fairfax County Zoning Ordinance ..... (FCZO)

2.3 Virginia Uniform Statewide Building Code ..... (VUSBC)

2.4 Class of Play Category (IESNA RP-6-01) III

2.5 Lighting Environmental Zone Classification (IESNA RP-33-99) ..... LEZ 2 and LEZ 3

2.6 Aimable system

2.7 Light Loss Factor (LLF) ..... 0.80 [1]

3.0 ELECTRICAL REQUIREMENTS

3.1 Voltage ..... 480 Volt, 3 Phase

3.2 Lamp ..... 1,500 Watt metal halide

3.3 Luminaires (including spill and glare control devices) ..... UL 1598-00

3.4 Electrical equipment enclosures ..... NEMA 3R

4.0 LIGHTING PERFORMANCE REQUIREMENTS

4.1 **ON-FIELD ▪ Rectangular Fields**

1. Maximum permitted illuminance (FCZO) ..... 50 foot-candles
2. Maintained average horizontal illuminance ..... 33 foot-candles [2]
3. Uniformity Ratio not to exceed 3:1
4. Calculation and on-field measurement grid (see Figures 1 to 5) ..... 15ft x 15ft

[1] *Alternate Light Loss Factors will be considered. A Tilt Factor is required when applicable.*

[2] *Testing tolerance 10% included therefore field measured maintained average horizontal illuminance levels shall not be below 30fc.*

4.2 **ON-FIELD ▪ Diamond Fields**

1. Maximum permitted illuminance (FCZO) ..... 60 foot-candles
2. Minimum maintained average horizontal illuminance (Infield) ..... 55 foot-candles [3]
3. Minimum maintained average horizontal illuminance (Outfield) ..... 33 foot-candles [4]
4. Uniformity Ratio not to exceed (Infield) 2:1
5. Uniformity Ratio not to exceed (Outfield) 2.5:1
6. Calculation and on-field measurement grid (see Figures 1 to 5)..... 15ft x 15ft

4.3 **OFF-FIELD ▪ Standard A**

When a residential property line is 200 ft or less from a field perimeter line, foul line, or outfield fence line as applicable and indicated on Figures 1 to 5.

1. Maximum permitted initial vertical spill [5] ..... 0.3 foot-candles
2. Maximum permitted initial glare ..... 7,000 candelas

4.4 **OFF-FIELD ▪ Standard B**

When a residential property line is more than 200 ft from a field perimeter line, foul line, or outfield fence line as applicable and indicated on Figures 1 to 5.

1. Maximum permitted initial vertical spill [5] ..... 0.8 foot-candles
2. Maximum permitted initial glare ..... 12,000 candelas

5.0 REMOTE CONTROL SYSTEM REQUIREMENTS

5.1 A security code based, 24-hour, remote control system that enables Owner and/or authorized user to remotely turn the system on or off, control the field lighting schedule, and monitor the system, using telephone and web based or software driven computer.

5.2 The remote control system shall be protected against power outages and memory loss, shall reboot to real-time once power is restored, and execute any commands issued prior to the outage.

5.3 The remote control system shall monitor and provide reports of actual lighting system usage.

5.4 On-site equipment shall include manual on/off switches to allow for maintenance and manual operation.

5.5 System shall be capable of operating any given field from multiple computers via the Internet.

6.0 POLE AND FOUNDATION REQUIREMENTS

6.1 Pole locations ..... As shown on Figures 1 to 5

6.2 Pole height (above finished grade) ..... maximum 90 ft.

6.3 Pole material ..... ASTM A595, hot-dip galvanized steel; or precast concrete

6.4 Design criteria ..... Dead load and basic wind velocity of 90 mph plus gust factor

6.5 Foundations ..... Reinforced concrete (designed by a Professional Engineer registered in Virginia)

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[3] *Testing tolerance 10% included therefore field measured maintained average horizontal illuminance levels shall not be below 50fc.*

[4] *Testing tolerance 10% included therefore field measured maintained average horizontal illuminance levels shall not be below 30fc.*

[5] *Spill light measurement grid points at 30 ft O/C as shown on Figures 1 to 5. Measurements shall be in the vertical plane at 5ft above grade, with the meter oriented towards a point at the center of the field 50 ft above grade.*

7.0 WARRANTY AND MAINTENANCE REQUIREMENTS

7.1 The lighting system manufacturer shall provide all materials and labor to ensure all lighting system components, excluding lamps, remain in good operating condition for a 10 year Warranty Period.

7.2 The lighting system manufacturer shall provide all materials and labor to ensure the lighting system performs as designed, throughout the Maintenance Period of 7,500 service hours or 15 years, whichever occurs first. During the Maintenance Period the manufacturer shall:

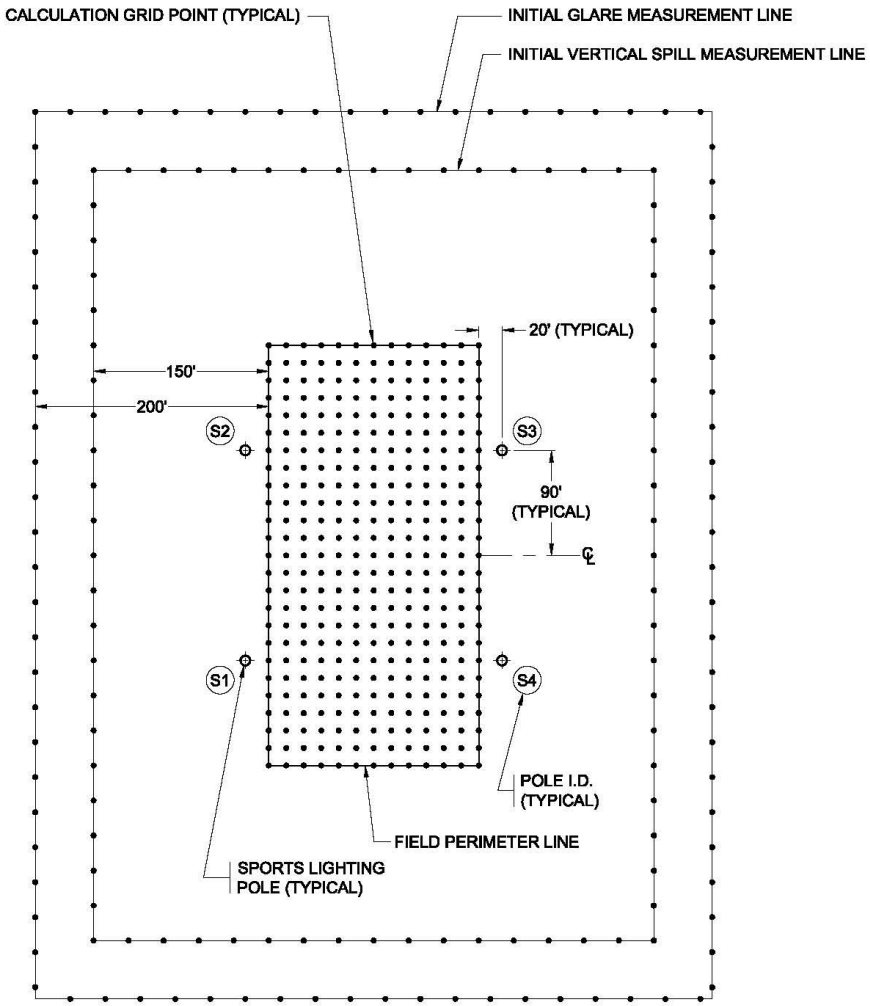
1. Maintain lighting levels within ±10% of the maintained horizontal average illuminance level for the entire field.
2. Group-replace all lamps when they reach the end of their service life as specified by the lamp manufacturer.
3. Spot-replace individual lamps when 10% of the lamps are extinguished on the entire athletic field or more than one lamp is extinguished on any one pole.

7.3 All repairs shall be made within 2 weeks of notification.

(End)

ATTACHMENTS

FIGURE 1 (REV A)



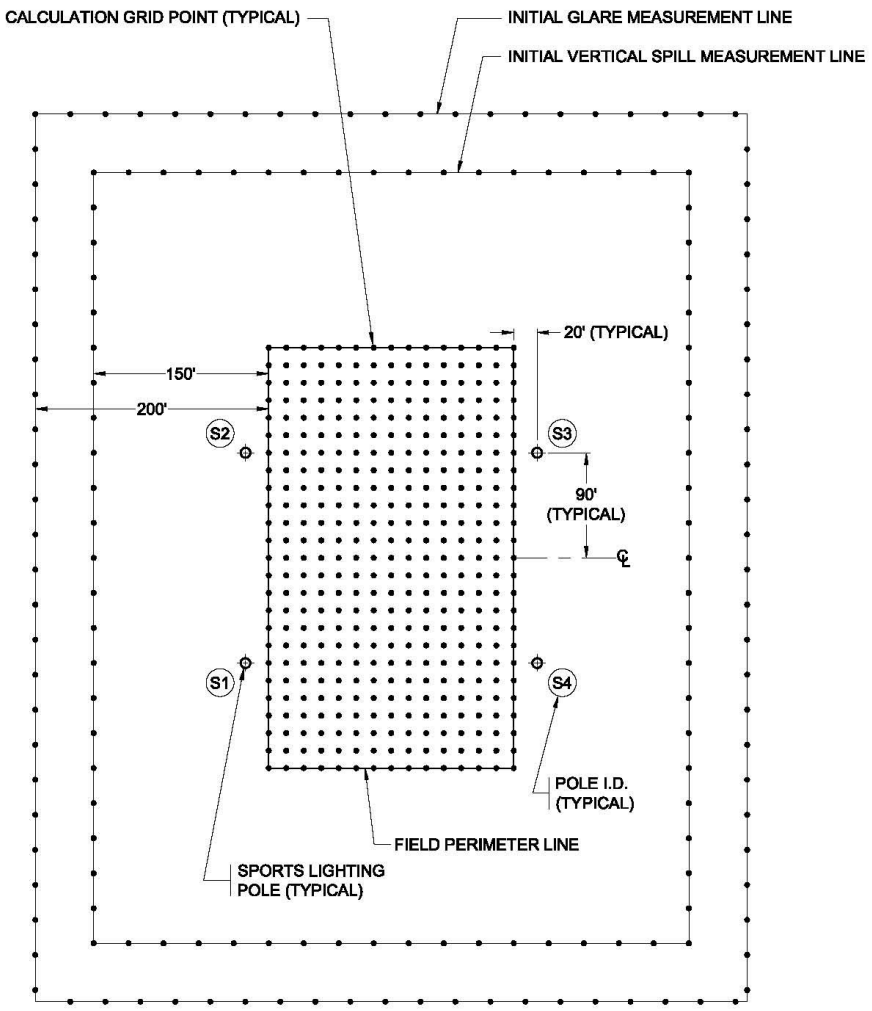
NOTE:
POLE LOCATIONS, GRID LAYOUTS, MEASUREMENT LINES, FIELD SIZE AND POLE NUMBERING MUST BE AS PER LAYOUT ABOVE.

SMALL RECTANGULAR FIELD LAYOUT DRAWING

(180'W x 360'H)

0 50ft 100ft

FIGURE 2 (REV A)



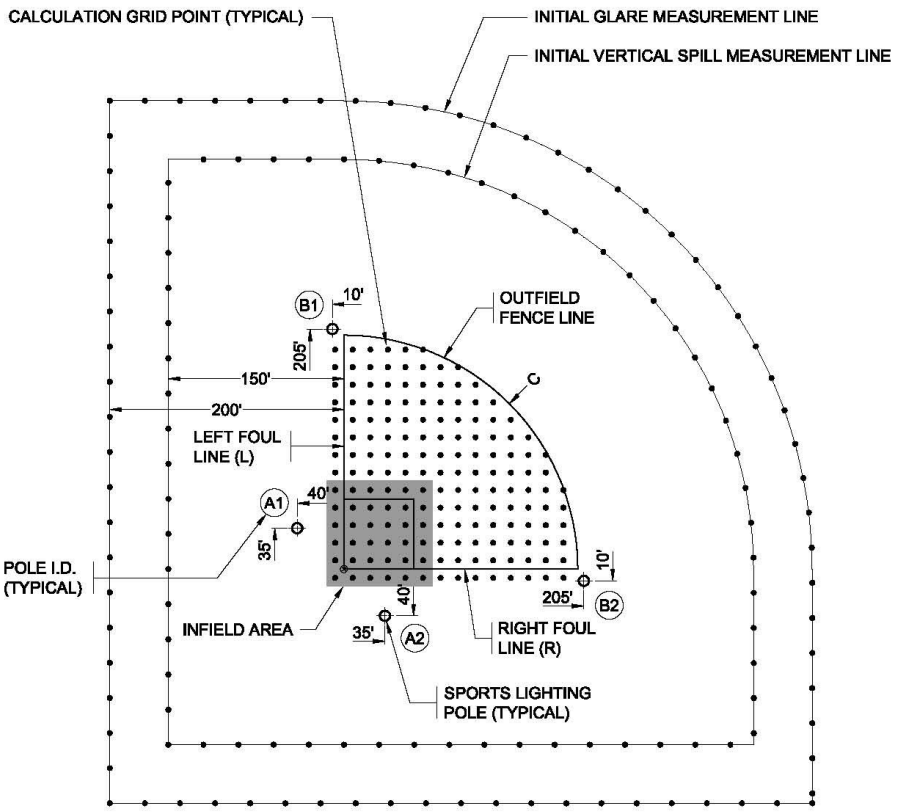
NOTE:
POLE LOCATIONS, GRID LAYOUTS, MEASUREMENT LINES, FIELD SIZE AND POLE NUMBERING MUST BE AS PER LAYOUT ABOVE.

LARGE RECTANGULAR FIELD LAYOUT DRAWING

(210'W x 360'H)

0 50ft 100ft

FIGURE 3 (REV A)



POLE LOCATION DIMENSIONS ARE RELATIVE TO HOME PLATE (0,0 REFERENCE POINT) ⊗

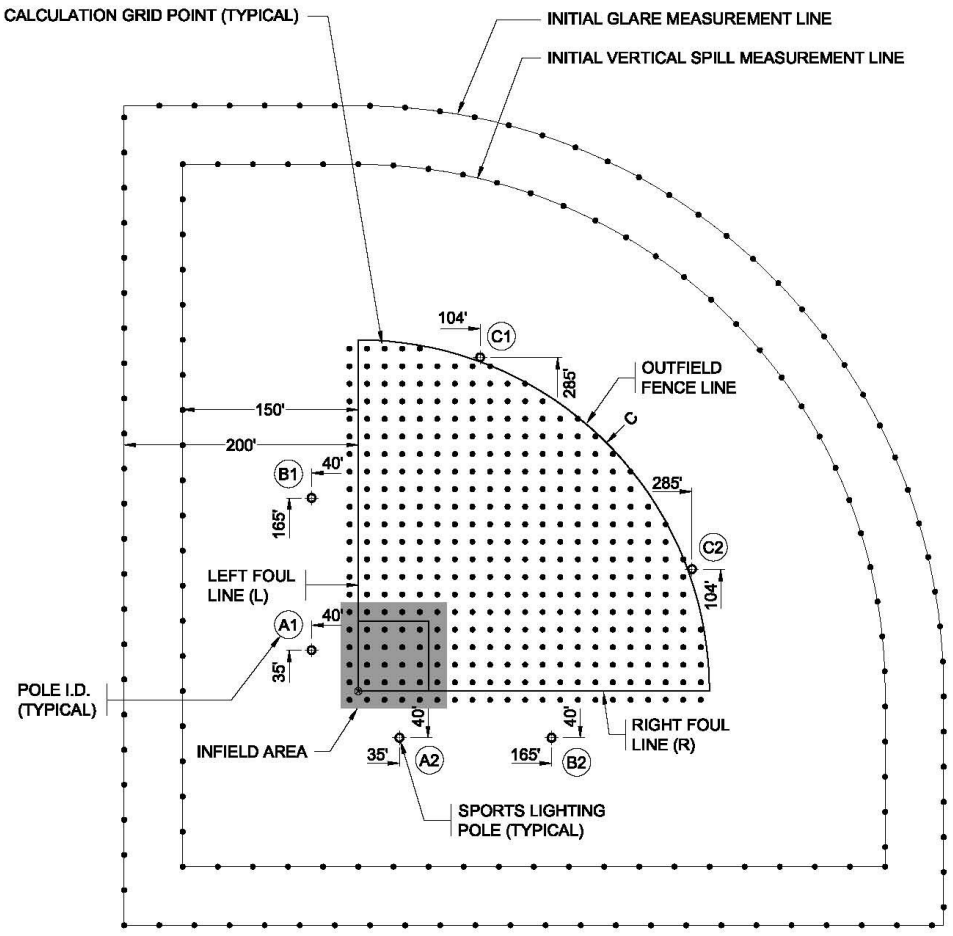
NOTE:
POLE LOCATIONS, GRID LAYOUTS, MEASUREMENT LINES, FIELD SIZE AND POLE NUMBERING MUST BE AS PER LAYOUT ABOVE.

LITTLE LEAGUE - U13 / FAST PITCH DIAMOND FIELD LAYOUT DRAWING

(L=200', C=200', R=200')

0 50ft 100ft

FIGURE 4 (REV A)



POLE LOCATION DIMENSIONS ARE RELATIVE TO HOME PLATE (0,0 REFERENCE POINT) ⊗

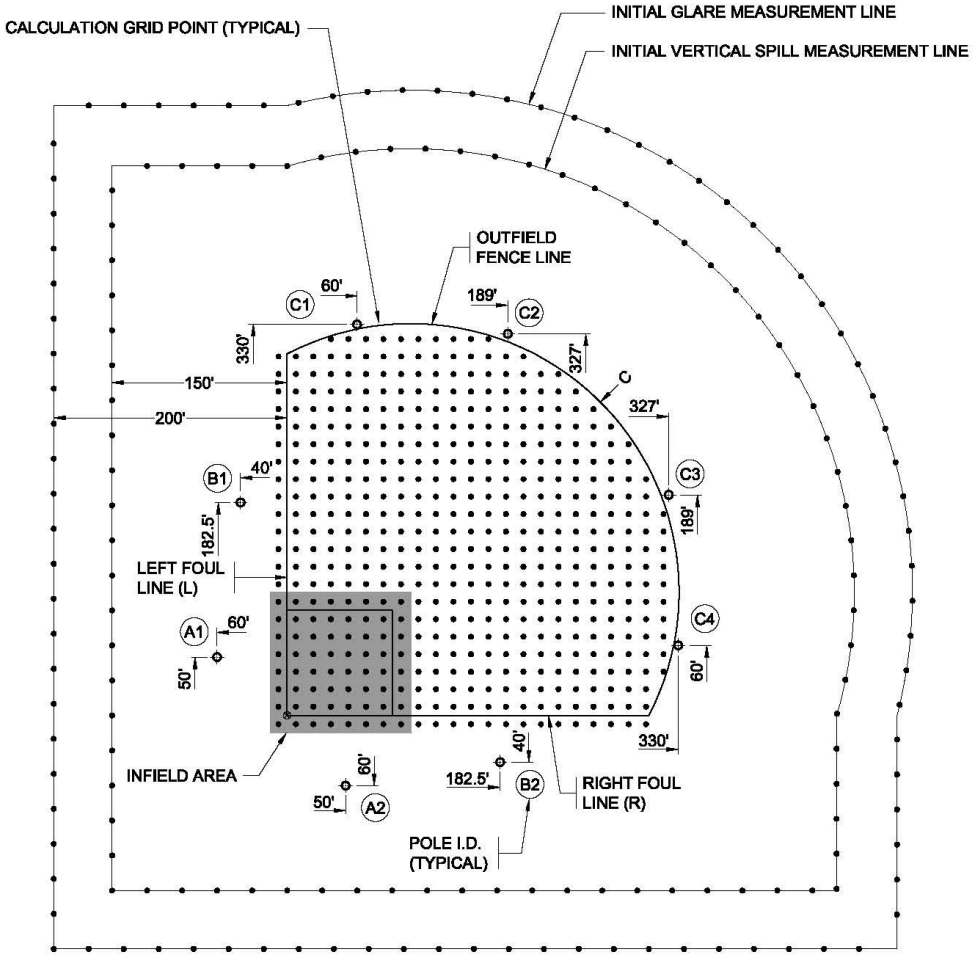
NOTE:
POLE LOCATIONS, GRID LAYOUTS, MEASUREMENT LINES, FIELD SIZE AND POLE NUMBERING MUST BE AS PER LAYOUT ABOVE.

SLOW PITCH / SOFTBALL DIAMOND FIELD LAYOUT DRAWING

(L=300', C=300', R=300')

0 50ft 100ft

FIGURE 5 (REV A)



POLE LOCATION DIMENSIONS ARE RELATIVE TO HOME PLATE (0,0 REFERENCE POINT) ⊗

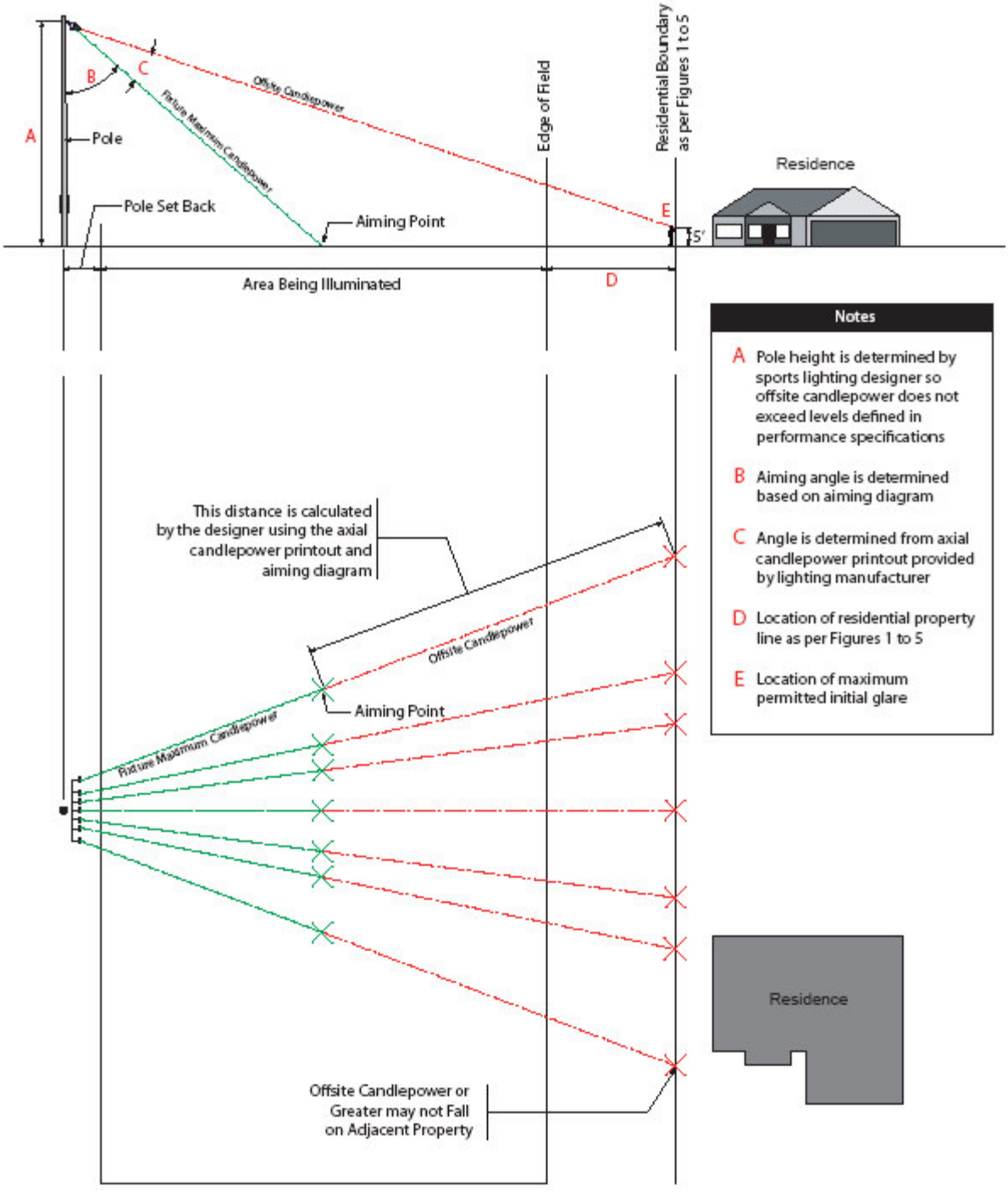
NOTE:
POLE LOCATIONS, GRID LAYOUTS, MEASUREMENT LINES, FIELD SIZE AND POLE NUMBERING MUST BE AS PER LAYOUT ABOVE.

BABE RUTH / BASEBALL DIAMOND FIELD LAYOUT DRAWING

(L=310', C=380', R=310')

0 50ft 100ft

FIGURE 6



Glare Analysis